



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,889	03/06/2007	Morton Graham	5297-00001	7564
7590 03/24/2011				
Andrus, Sceales, Starke & Sawall 100 East Wisconsin Avenue Suite 1100 Milwaukee, WI 53202-4178				
EXAMINER				
CROWE, DAVID R				
ART UNIT		PAPER NUMBER		
2885				
MAIL DATE		DELIVERY MODE		
03/24/2011		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/582,889

Applicant(s)

GRAHAM, MORTON

Examiner

DAVID R. CROWE

Art Unit

2885

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 4, 6, 9, 10, 12, 13, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 6, 9, 10, 12, 13, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/14/11 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification refers to the undulating surface shown in figure 2 as a first embodiment and the striated member of figure 5 as a different embodiment. Both the striation and undulation are understood from the specification as used to extract light from the transparent rod. The examiner asserts that the applicant

did not possess the combination of these elements, as now claimed, at the time of filing.

The examiner suggest that at said time these features where alternatives.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 3, 4, 6, 9, 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph et al (US 7,433,565) (available as prior art under 102[e] as of 9/8/03 since PCT/AU03/01173 was published in English and designated the US) in view of Hulse (US 6,550,952) and Oyama (US 5,233,679).**

6. Re claim 1: Joseph teaches an elongate transparent member [core 3] of a material having substantial total internal reflection of light [see beam reflected off surface 5, figure 1] and a light source [to inject light 10] located at least at one end of the transparent member [3] to pass light into and along the member by primary diffusion of light ["In use light is injected into one end of light guide 2 in the direction shown by arrow 10. Almost all the light is transmitted along the guide within the core 3 and is totally internally reflected when it strikes the external surface 5 of core 3." Column 4 line

20] a second elongate member [diffuser jacket 7] arranged in superimposed relationship with the elongate transparent member [3] thus to define a gas space therebetween [“layer of air 6” column 4 line 14], wherein the member [3] is a rod, and the second elongate member [7] is a tube surrounding the rod and defining the gas space therebetween; the transparent rod [3] is adapted in use to function as a leaky waveguide allowing light to escape into the gas space via scattering particles [4] for secondary diffusion therein, and in that the tube [7] is of a translucent material thus being adapted to diffuse and be illuminated by the secondarily diffused light and render the particles [4] invisible so that substantially uniform illumination is created.

Joseph fails to teach 1) the source of light [10] as an LED, 2) the dimensions of the device including the core diameter, device length and width of the air space, or 3) the use of striation as claimed.

With respect to missing element 1, Hulse teaches a first elongate member [rod 10] which is illuminated by an LED type light source [16].

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to insert the specific LEDs of Hulse as the means for producing light [10] of Joseph as a matter of substituting a known specific light source type for a generic source of light to make use the light source's advantages. One would have been motivated since LEDs are recognized in the illumination art to have many desirable advantages, including reduced size, high efficiency, low power consumption, long life, and resistance to vibrations over other light sources.

With respect to missing element 2, it would have been obvious to one of ordinary skill in the art at the time the invention was made to define the width of layer 6 as about 2 mm, define the diameter of the core [3] as 10-20 mm [wherein the figures of Joseph suggest a ratio of layer 6 width to core 3 diameter of between 5 and 10], and define the length of the core [3] as 330-2000mm [wherein the claimed length requirement is a very wide range and Joseph clearly demonstrates the length is to be substantially longer than the diameter of the core], since it has been held by the courts that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device, and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). One skilled in the art would be motivated to choose the dimensions of the device based on the size of the line of light which the user wishes to create.

With respect to missing element 3), Oyama et al teaches a translucent member [10] which is illuminated by a light source [20] through the end [28] of the fiber. The fiber [10] further including a surface formation comprising at least one region of striations [16] between clear areas [spaced between each cut] of the surface of the member [10] formed on the light radiating surface of the first member to cause light entering the edge of the body to be emitted out of the body through the radiating surface, the number and kind of striations with respect to the clear areas being selected

to maximize light output from the device. [See figure 1, column 4 line 17 through column 5 line 16]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to either replace the core [3] of Joseph with the light member [10] having striations [16] of Oyama as a matter of replacing one known element for another to achieve expected results, or alternatively apply the striations [16] of Oyama to the core [3] of Joseph with or without using particles [4] as a matter of selecting between two known techniques [the striations and the particles] for facilitating the leaking of light out of an otherwise totally internally reflective light guide. One skilled in the art would select between the striations and the particles in order to select the method which provides the best combination of uniform illumination and high output efficiency.

7. Re claim 3: As best understood, where the undulating surface is broadly interpreted and not limited to the release of light, Joseph teaches the light guide [core 3] may be flexible [column 3, line 19] resulting in the creation of an undulating surface.

8. Re claim 4: The rod [3] is of circular cross-section. [See figure 3].

9. Re claim 6: With respect to Joseph using an LED as a light source as discussed in claim 1, Joseph modified by Hulse fail to expressly suggest light incident at both ends of the core [3].

Oyama teaches a light guiding core [10] with light from a light source [18] incident at one end [figure 1] or alternatively incident on both ends [figure 19] of the transparent core [10].

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Joseph using the LED of Hulse to include an LED light source at each end of the core [3] as taught by Oyama, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. One skilled in the art would be motivated to have light incident at both ends to increase the brightness of the device.

10. Re claim 9: The first elongate member [3] is of acrylic material. [Polymethyl methacrylate (PMMA), column 3 line 62]. Further Joseph discloses "Its core may be formed of a polymer, such as acrylic", column 3 line 20]

11. Re claim 10: The second elongate member [7] is of an acrylic material [PMMA, column 4 line 16].

12. Re claim 16: As applied to Joseph modified by Hulse and Oyama, Oyama teaches a plurality of striations cut in the surface of the first translucent member; the V-shaped striations thus created extend at least substantially throughout the length of the first member and are spaced apart around at least a part of the extent of the surface of the first member.

Although Joseph modified by Hulse and Oyama fails to explicitly suggest the depth and width of the striations, it would have been obvious to one of ordinary skill in the art at the time the invention was made to cut the grooves between .5 and 1 mm in size, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum range involves only routine skill in the art. In re Aller, 105 USPQ 233. One skilled in the art would be motivated to select the size of the striation in order to optimize the diffusion and light emitting effects for the translucent first member.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph modified by Hulse et al and Oyama as applied to claim 1 in further view of Yamamoto et al (US 6,601,984). The teachings of Joseph modified by Hulse and Oyama have been discussed above.

Joseph modified by Hulse and Oyama fails to teach increasing the striation in the central portion of the first member away from the ends.

Yamamoto et al teaches a translucent member [1] with at least one LED [2] disposed on each end of the member [1], and grooves [11] formed in the first member for diffracting light out of the member. Yamamoto teaches increasing the striation [increasing the density of grooves by moving them closer together] in the central region of the light member [1] further from the LEDs at the edges of the member. "It is desirable to set a wider interval between grooves 11 on the ends of the light-guiding

member 1, that is, near the LEDs 2, and to gradually narrow the intervals going away from the LEDs 2.” [See figures 1 and 2, column 4 line 66 through column 5 line 62]

It would have been obvious to one of ordinary skill in the art to increase the striation of the first member [3] of Joseph in the central portion of the member away from the light sources in order to, “Achieve a uniform illumination along the entire length of the light-guiding member 1,” as suggested by Yamamoto.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph modified by Hulse et al and Oyama as applied to claim 1 in further view of Strack et al (US 3,901,674). The teachings of Joseph modified by Hulse and Oyama have been discussed above.

Joseph modified by Hulse et al and Oyama fails to teach spacers between first member [3] and second member [7].

Strack et al teaches optical fiber [16] with a first member [rod 18], a second member [tube 20] surrounding the first member and forming an air gap [26], wherein support means [24] are provided in the gas space to maintain a predetermined special relationship between the first and second members. [See figure 2, columns 2 and 3]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the spacers [24] of Strack between the members [3 and 7] of Joseph in order to maintain the first member [3] centered in the tube member [7] as

suggested by Strack as the purpose of the spacers such that the gap remains constant and subsequent lighting effects uniform.

15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph modified by Hulse et al, Oyama and Yamamoto et al (US 6,601,984) as applied to claim 12 in further view of Kuo (US 2004/0075994). The teachings of Joseph modified by Hulse, Oyama and Yamamoto have been discussed above.

Joseph modified by Hulse, Oyama and Yamamoto teaches using striation which increases away from the light sources but fails to suggest doing so with additional striations occupying less than the overall length of the first member as claimed.

Kuo teaches a first translucent member [light guide 2] having striations [veins 30] disposed on the surface therefore to facilitate light incident on the light guide [2] view light source [1] disposed at the end thereof being emitted from the light guide [2] out of the emission face thereof. As clearly shown in figure 7, the density of the veins [31] increases with distance from the light source, thereby maintaining uniform emission, in a manner similar to that suggested by Yamamoto. Further, the increase in density/number of veins at the far side of the light guide is provided by angling the veins such that they meet at a central distance position and some of said veins do not originate at the incident face of the light guide, thereby occupying less than the overall length of the light guide as claimed. [See figures 7 and 8, paragraphs 19-25]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the striations of Joseph modified by Hulse, Oyama and Yamamoto to include striations that do not run the full length of the translucent member [3] as shown in Kuo as just one of a number of striation patterns known in the art to refract more light out of a light guide at a position further from the light source in order to maintain a uniform light emission pattern.

Response to Arguments

16. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

The applicant suggests two approaches to creating a waveguide with weak scattering: volumetric and surface. The applicant's suggestion appears to indicate these are known in the art. The examiner asserts that Joseph uses volumetric scattering using internal particles and that Oyama teaches surface scattering with striations. The examiner asserts above that the substitution of the methods or alternatively the combination of methods would have been known to one of ordinary skill in the art.

On page 11, the applicant asserts that claim 1 is not rendered obvious by the combination of Thompson, Hulse and Oyama. Because it is undesirable to change the windows of Thompson since Thompson does not prefer a uniform appearance. The examiner asserts this issue is resolved by replacing the Thompson reference with that

of Joseph which does teach a desire for uniform illumination and not the use of windows. The applicant's alleges the previous combination was not obvious because of the added step and necessity of the transparent tube to render the marks invisible. Again, the examiner asserts that the Joseph reference which now replaces the Thompson reference clearly suggests a tube with is translucent and highly diffusive to render invisible the imperfections in the core. The examiner maintains that the Oyama reference is sufficient to teach the use of striations per se as claimed and the applicant has not provided arguments which directly rebut the teachings of Oyama per se.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID R. CROWE whose telephone number is (571)272-9088. The examiner can normally be reached on 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on 571-272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R Crowe/
Examiner, Art Unit 2885

DRC